

BEFORE THE OFFICE OF THE COMMISSIONER OF RAILROADS

STATE OF WISCONSIN

On the Commissioner's Own Motion for a Determination of the Adequacy of Warning Devices at Two Grade Crossings of the Wisconsin Central Ltd. Tracks with CTH 'E' in the Town of Bass Lake, Washburn County

9164-RX-561

FINDINGS OF FACT AND ORDER

On May 14, 2004, the Commissioner of Railroads directed the staff of the Office of the Commissioner of Railroads (OCR) to investigate the adequacy of warning devices under §195.28, Stats., at two grade crossings of the Wisconsin Central Ltd. (WCL) tracks with CTH 'E' in the Town of Bass Lake, Washburn County (Crossing Nos. 697 357R / MP 397.92 and 697 358X / MP 399.59).

An OCR investigator inspected the crossings in August, 2004. No hearing was held.

Findings of Fact

THE COMMISSIONER FINDS:

The WCL operates 15 through train movements per day over both CTH 'E' crossings at a timetable speed of 60 mph. Each crossing consists of one mainline track.

CTH 'E' (South)

Crossing No. 697 357R / MP 397.92

CTH 'E' is 24' wide in the vicinity of the crossing. CTH 'E' carried an average daily traffic (ADT) of 650 according to 2002 DOT records at a legal speed limit of 55 mph.

A motorist traveling at 55 mph requires a safe stopping distance of 527'. The crossing is visible from more than 527' in each direction. Assuming a train speed of 60 mph, a motorist traveling at 55 mph needs to see a train when it is 550' from the crossing from a point 527' down the highway. The sight distance available in each quadrant from the safe stopping distance is inadequate in all quadrants due to hills and trees. The railroad runs through a cut at this location.

At all crossings, except those with gates, a driver stopped 15' short of the near rail must be able to see far enough down the track, in both directions, to determine if sufficient time exists for moving their vehicle safely across the tracks to a point 15' past the far rail, prior to the arrival of a train. Required clearing sight distance along both directions of the track, from the stopped position of the vehicle, is dependent upon the maximum train speed and the acceleration characteristics of the "design" vehicle. The necessary clearing sight distance at the CTH 'E' crossing is 1345'. The available clearing sight distance is more than 1345'.

The exposure factor at this crossing is 9750. The exposure factor equals the product of the number of trains per day and the number of highway vehicles per day, which yields a numerical value for the potential conflicts each day at the crossing.

Six train-vehicle accidents have occurred at this crossing since 1973. The accidents occurred in 1976, 1988, 2000, 2001, and 2003 (2).

An accident prediction model developed by the Federal Railroad Administration (FRA) allows a projection of expected future accidents based on a number of factors including train volume and speed, highway volume and accident history. The model can be used to compare the expected accident rates given different warning devices. The predicted rate, however, is only one tool for evaluating safety improvements and does not replace sound judgment based on a consideration of all known factors.

The CTH 'E' crossing has a predicted accident rate of 0.16 accidents per year, or one accident every 6.25 years, with the present warning devices.

The Wisconsin Department of Transportation has produced a benefit-cost analysis for all at-grade crossings in the state. Installing new automatic flashing lights with gates and constant warning time circuitry at the CTH 'E' crossing has a net benefit of about \$571,000. The benefit-cost ratio is about 4.51 meaning that the public will receive \$4.51 in safety benefits for each dollar expended.

Accidents that do occur here will likely be quite serious if a through train is involved due to their 60 mph speed. Train speed is strongly correlated with fatalities in train/vehicle accidents. More specifically, crossings with train speeds of 40 mph and over have a disproportionate number of fatalities. According to Federal Railroad Administration (FRA) statistics, nationally, in 1994 71% of fatalities occurred at crossings with train speeds of 40 mph+, even though only 26% of all crossings had train speeds of 40 mph+.

The crossing is presently protected with advance warning signs, reflective crossbucks and stop signs. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the accident history, very poor vision triangles, predicted accident rate, and projected net benefit.

CTH 'E' (North)

Crossing No. 697 358X / MP 399.59

CTH 'E' is 24' wide in the vicinity of the crossing and intersects the railroad tracks at an angle of 45°. CTH 'E' carried an ADT of 650 according to 2002 DOT records at a legal speed limit of 55 mph. CTH 'E' intersects Beaver Lake Road about 75' from the crossing.

A motorist traveling at 55 mph requires a safe stopping distance of 527'. The crossing is visible from more than 527' in each direction. Assuming a train speed of 60 mph, a motorist traveling at 55 mph needs to see a train when it is 550' from the crossing from a point 527' down the highway. The sight distance available in each quadrant from the safe stopping distance is

inadequate in all quadrants due to trees.

At all crossings, except those with gates, a driver stopped 15' short of the near rail must be able to see far enough down the track, in both directions, to determine if sufficient time exists for moving their vehicle safely across the tracks to a point 15' past the far rail, prior to the arrival of a train. Required clearing sight distance along both directions of the track, from the stopped position of the vehicle, is dependent upon the maximum train speed and the acceleration characteristics of the "design" vehicle. The necessary clearing sight distance at the CTH 'E' crossing is 1345'. The available clearing sight distance is more than 1345'.

The exposure factor at this crossing is 9750.

Three train-vehicle accidents have occurred at this crossing since 1973. The accidents occurred in 1977, 2000, and 2003.

The CTH 'E' crossing has a predicted accident rate of 0.10 accidents per year, or one accident every 10 years, with the present warning devices.

Installing new automatic flashing lights with gates and constant warning time circuitry at the CTH 'E' crossing has a net benefit of about \$571,000. The benefit-cost ratio is about 4.51 meaning that the public will receive \$4.51 in safety benefits for each dollar expended.

Accidents that do occur here will likely be quite serious if a through train is involved due to their 60 mph speed.

The crossing is presently protected with advance warning signs, reflective crossbucks and stop signs. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the accident history, very poor vision triangles, predicted accident rate, and projected net benefit.

Constant warning time circuitry adjusts for train speed and causes the crossing signals to always operate for the same amount of time before the train reaches the crossing, regardless of train speed. A motion detector simply detects the train operation, but does not adjust for train speed so that the amount of warning time varies based on train speed.

Light emitting diodes (LED) are a relatively new application for crossing signals. The LED lamps replace the incandescent bulbs. LEDs have higher conspicuity, a wider cone of vision, and longer life than incandescent lights. LEDs are especially useful on east-west roadways where the rising and setting sun may make the signals difficult to see.

Source of funding: The signal materials and installation shall be paid from OCR safety funds.

Conclusion on the Issue

THE COMMISSIONER CONCLUDES:

That in order to adequately protect and promote public safety, it is necessary to install and maintain 12" LED automatic flashing lights with gates and constant warning time circuitry at the two crossings of the tracks of Wisconsin Central Ltd. with CTH 'E' in the Town of Bass Lake, Washburn County.

Conclusion of Law

THE COMMISSIONER CONCLUDES:

That the jurisdiction of the Office of the Commissioner of Railroads under §195.28, Stats., extends to this matter. Accordingly, the Office enters an order consistent with the findings of fact.

Order

THE COMMISSIONER ORDERS:

1. That the **Wisconsin Central Ltd.** shall install and maintain 12" LED automatic flashing lights with gates, and constant warning time circuitry with appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with CTH 'E' at-grade in the Town of Bass Lake, Washburn County by **December 31, 2006** (Crossing No. 697 357R / MP 397.92).

2. That the **Wisconsin Central Ltd.** shall install and maintain 12" LED automatic flashing lights with gates, and constant warning time circuitry with appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with CTH 'E' at-grade in the Town of Bass Lake, Washburn County by **December 31, 2006** (Crossing No. 697 358X / MP 399.59).

3. That the **Wisconsin Central Ltd.** shall submit to the Office of the Commissioner of Railroads signal and circuit plans with the cost estimate of its proposed installation and upon completion of the signal project, a detailed statement of the actual cost to the Office and to the Wisconsin Department of Transportation.

4. That the signal installation work herein ordered shall not begin until the district office of the Wisconsin Department of Transportation informs the railroad that they may start such work and such start notice will not be issued until appropriate federal aid or other funding arrangements have been assured. The cost of the new project initiated before the start notice will not be reimbursed with public funds and shall be the responsibility of the railroad.

5. That the **Wisconsin Central Ltd.** shall bear no part of the cost of the crossing signals installation, except for any cost assessed to the railroad pursuant to §195.60, Stats., for the investigation of this matter by the Office. The railroad shall not pass on those assessment costs either directly or indirectly.

6. That if the petitioner, railroad or any interested party objects to this order and requests a hearing within 20 days of the date of this order in writing, the Office will hold a public hearing.

7. That jurisdiction is retained.

Dated at Madison, Wisconsin, _____.

By the Office of the Commissioner of Railroads.

Rodney W. Kreunen
Commissioner of Railroads

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